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EXAMINER	
BEHULU, ALEMAYEHU	

ART UNIT	PAPER NUMBER
2682	

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11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,648	TSIEN ET AL.	
	Examiner	Art Unit	
	Alemayehu Behulu	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/20/04*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *32-35* is/are allowed.

6)☒ Claim(s) *1-8,10-17,20, 21, 23-31, 36-41* is/are rejected.

7)☒ Claim(s) *9 and 18-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-8, 36, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGhee (U.S. Patent No. 6,553,075) in view of Shoemake (U.S. Pub. No. 2002/0105925).

Referring to claims 1, 36, McGhee discloses a method comprising, monitoring a variable rate data communication channel to determine its signal to noise ratio (abstract, column 2, lines 14-30, column 3, lines 39-column 4, lines 16), and adjusting the data transmission rate of the variable rate data transmission channel if the signal-to-noise-ratio of the communication channel cannot be determined (column 4, lines 44-56). However, McGhee fails to disclose signal-to-noise-ratio in a defined period of time. But, Shoemake discloses signal-to-noise-ratio in a defined period of time (paragraphs [0008]-[0009], refer to the equation too). Therefore at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine McGhee (U.S. Patent No. 6,553,075) with Shoemake (U.S. Pub. No. 2002/0105925) in order to control the transmission rate and power accurately (as suggested by Shoemake).

Regarding claim 2, the combination of McGhee and Shoemake disclose the method of claim 1, adjusting the data transmission rate includes comparing the signal to noise ratio of the variable rate data communication channel to a plurality of signal to noise ratio range (see Shoemake paragraphs [0038], [0043], [0044], and figures 4 and 6C).

Regarding claim 3, the combination of McGhee and Shoemake disclose the method of claim 2 wherein adjusting the data transmission rate further includes selecting the signal-to noise ratio range that encompasses the signal-to-noise ratio of the variable rate data communication channel (see Shoemake paragraphs, [0032], [0033], [0038]-[0045] and figures 4, 6B, 7B, and 6C).

Regarding claim 4, the combination of McGhee and Shoemake disclose the method of claim 3 wherein each signal-to-noise ratio range is associated with a specific data transmission rate (figure 4), adjusting the data transmission rate further includes setting the data transmission rate of the variable rate data communication channel to the specific data transmission rates associated with the selected signal-to-noise ratio range (see Shoemake paragraphs [0004], [0042], [0045], and figures 6B, 7B, 6C, 7C and 8).

Regarding claim 5, the combination of McGhee and Shoemake disclose the method of claim 1 wherein the variable rate data communication channel is a bidirectional channel that includes a receive side for receiving data from a remote device and a transmit side for transmitting data to that remote device (see Shoemake figures 2), said monitoring a variable-rate data communication channel includes determining a noise signal strength

factor for the receive side of the variable-rate data communication channel (see Shoemake figures 3-7,paragraphs [0032] and [0033], figure 1, numbers 110, 130a, 130b, figure 3, numbers 310, 330a, 330b, figure 7A, numbers 710, 730b).

Regarding claim 6, the combination of McGhee and Shoemake disclose the method of claim 5 wherein monitoring a variable-rate data communication channel includes determining a received signal strength factor for the receive side of the variable-rate data communication during a transmission period (see Shoemake figures 5-6, paragraphs [0035]-[0041]).

Regarding claim 7, the combination of McGhee and Shoemake disclose the data transmission rate control process of 6 wherein said SNR determination process includes a data signal determination process for determining the difference between said received signal strength factor and said noise signal strength factor, wherein said difference is a data signal strength factor (see Shoemake figures 3, 5A, 6A, 7A, 6B, numbers 640, 625, figure 7B, numbers 740, 725, note: the office interprets the SNR as the difference or ration between the signal and noise and SNIR the difference between the signal and noise interference ratio).

Regarding claim 8, the combination of McGhee and Shoemake disclose the method of claim 6 wherein monitoring a variable-rate data communication channel includes determining the signal-to-noise ratio of the variable-rate data communication channel

from the data signal strength factor and the noise signal strength factor (see Shoemake figures 1, 3,4, 6A, 6B, 7A, 7B).

Regarding claim 37, the combination of McGhee and Shoemake disclose the method of claim 1 further comprising adjusting the data transmission rate of variable data communication channel based on its signal-to-noise-ratio (see Shoemake figures 1-7).

2. Claims 10-17, 23, 24 38, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGhee (U.S. Patent No. 6,553,075) and Shoemake (U.S. Pub. No. 2002/0105925) in view of Borg (U.S Patent No. 5, 355, 514).

Regarding claims 10, 23, McGhee discloses a data transmission rate control process (see figures 1-3) comprising: an SNR determination process for monitoring a variable-rate data communication channel to determine its signal-to-noise ratio (abstract, column 2, lines 14-30, column 3, lines 39-column 4, lines 16), a rate determination process, responsive to SNR determination process being unable to determine the signal-to-noise-ratio data communication channel, for setting the data transmission rate of variable rate data communication channel (column 4, lines 44-56). However, McGhee fails to disclose the signal-to-noise-ratio data communication channel for a defined period of time, monitoring signal during a non-transmission period to determine its signal-to-noise-ratio. But, Shoemake discloses the signal-to-noise-ratio data communication channel for a defined period of time (paragraphs [0008]-[0009], refer to the equation too). Therefore at the time of the invention it would have been obvious to a person of ordinary skill in the

art to combine McGhee (U.S. Patent No. 6,553,075) with Shoemake (U.S. Pub. No. 2002/0105925) in order to control the transmission rate and power accurately (as suggested by Shoemake). However, McGhee and Shoemake fail to disclose monitoring signal during a non-transmission period to determine its signal-to-noise-ratio. But, Borg discloses monitoring signal during a non-transmission period to determine its signal-to-noise-ratio (abstract, column 3, lines 13-55). Therefore at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine McGhee (U.S. Patent No. 6,553,075) and Shoemake (U.S. Pub. No. 2002/0105925) with Borg (U.S Patent No. 5, 355, 514) in order to determine the transmission quality continuously as suggested by Borg.

Regarding claim 11, the combination of McGhee, Shoemake and Borg disclose the method of claim 10, adjusting the data transmission rate includes comparing the signal to noise ratio of the variable rate data communication channel to a plurality of signal to noise ratio range (see Shoemake paragraphs [0038], [0043], [0044], and figures 4 and 6C).

Regarding claim 12, the combination of McGhee, Shoemake and Borg disclose the method of claim 11 wherein adjusting the data transmission rate further includes selecting the signal-to noise ratio range that encompasses the signal-to-noise ratio of the variable rate data communication channel (see Shoemake paragraphs, [0032], [0033], [0038]-[0045] and figures 4, 6B, 7B, and 6C).

Regarding claim 13, the combination of McGhee, Shoemake and Borg disclose the method of claim 12 wherein each signal-to-noise ratio range is associated with a specific data transmission rate (figure 4), adjusting the data transmission rate further includes setting the data transmission rate of the variable rate data communication channel to the specific data transmission rates associated with the selected signal-to-noise ratio range (see Shoemake paragraphs [0004], [0042], [0045], and figures 6B, 7B, 6C, 7C and 8).

Regarding claim 14, the combination of McGhee, Shoemake and Borg disclose the method of claim 10 wherein the variable rate data communication channel is a bidirectional channel that includes a receive side for receiving data from a remote device and a transmit side for transmitting data to that remote device (see Shoemake figures 2), said monitoring a variable-rate data communication channel includes determining a noise signal strength factor for the receive side of the variable-rate data communication channel (see Shoemake figures 3-7,paragraphs [0032] and [0033], figure 1, numbers 110, 130a, 130b, figure 3, numbers 310, 330a, 330b, figure 7A, numbers 710, 730b).

Regarding claim 15, the combination of McGhee, Shoemake and Borg disclose the method of claim 14 wherein monitoring a variable-rate data communication channel includes determining a received signal strength factor for the receive side of the variable-rate data communication during a transmission period (see Shoemake figures 5-6, paragraphs [0035]-[0041]).

Regarding claim 16, the combination of McGhee, Shoemake and Borg disclose the data transmission rate control process of claim 15 wherein said SNR determination process includes a data signal determination process for determining the difference between said received signal strength factor and said noise signal strength factor, wherein said difference is a data signal strength factor (see Shoemake figures 3, 5A, 6A, 7A, 6B, numbers 640, 625, figure 7B, numbers 740, 725, note: the office interprets the SNR as the difference or ration between the signal and noise and SNIR the difference between the signal and noise interference ratio).

Regarding claim 17, the combination of McGhee, Shoemake and Borg disclose the data transmission rate control process of claim 16 wherein said SNR determination process includes a SNR calculation process for determining said signal-to-noise ratio of said variable-rate data communication channel from said actual signal strength factor and said noise signal strength factor (see Shoemake figures 2, 3 and paragraph [0033]).

Regarding claim 24, the combination of McGhee, Shoemake and Borg disclose the computer program product of claim 23, that computer readable medium is a read-only memory (see Shoemake paragraphs [0032] and [0042], figures 5C, 6C, 7C and 8, number 857).

Regarding claims 38, 39, the combination of McGhee, Shoemake and Borg disclose the process of claim 10 further comprising a transmission rate adjustment process, responsive

to SNR determination process, for adjusting the data transmission rate of variable rate data communication channel based on its SNR (see Shoemake figures 1-7).

3. Claims 25-30, 31, 40 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGhee (U.S. Patent No. 6,553,075) and Jalali (U.S. Pub No. 2003/0095506) in view of Borg (U.S Patent No. 5, 355, 514).

Regarding claim 25, McGhee discloses a rate determination process (abstract, column 2, lines 14-30, column 3, lines 39-column 4, lines 16), responsive to SNR determination process being unable to determine the signal-to-noise-ratio of variable rate data communication channel, for setting the data transmission rate of variable rate data communication channel (column 4, lines 44-56). However, McGhee fails to disclose a data communication rate control system comprising, first computing device including a first wireless communication system, a second computing device including a second wireless communication system, wherein first and second wireless communication systems form a variable rate data communication channel between first and second computing devices, that each wireless communication system includes a SNR determination process for monitoring variable-rate data communication channel to determine its signal-to-noise ratio, and a transmission rate adjustment process, responsive to SNR determination process, for adjusting the data transmission rate of variable rate data communication channel based on its signal-to-noise ratio, monitoring a non-transmission period to determine its signal-to-noise-ratio, signal-to-noise-ratio in a defined period of time. But, Jalali discloses a data communication rate control system

comprising, first computing device including a first wireless communication system (figure 3, number 110a), a second computing device including a second wireless communication system (figure 3, number 150a), wherein first and second wireless communication systems form a variable rate data communication channel between first and second computing devices (figure 1A, numbers 110, 112, 150 and 166, figure 3, number 110a, 150, 330, 342, 370 and 378, figures 4 and 5 and paragraph [0028]), that each wireless communication system includes a SNR determination process for monitoring variable-rate data communication channel to determine its signal-to-noise ratio (paragraphs [0026], [0045]-[0098], and [0113], and figures 1A, 2, 3, 4 and 5 and claims 1, 8, 9, 13, 19, 20 and 31), and a transmission rate adjustment process, responsive to SNR determination process, for adjusting the data transmission rate of variable rate data communication channel based on its signal-to-noise ratio (figure 2, numbers 220, 222, 224, figure 3, numbers 340, 330 see the solid arrow line from 340 to 330 for the transmitter side, numbers 378 and 380 see the dashed arrow line from 378 to 370 for the receiver side, figure 4, number 418, figure 5, number 370, and paragraphs [0025]-[0028], [0075], [0097]-[0098], and claims 13, 17,18, and 27), signal-to-noise-ratio in a defined period of time ((paragraphs [0035, [0076]-[0079]). Therefore at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine McGhee (U.S. Patent No. 6,553,075) with Jalali (U.S. Pub No. 2003/0095506) in order to improve system performance by controlling from both receive and transmit sides, as suggested by Jalali. However, McGhee and Jalali fail to disclose monitoring during a non-transmission period to determine its signal-to-noise-ratio. But, Borg discloses monitoring a non-transmission period to determine its signal-to-noise-ratio (abstract, column 3, lines 13-

55). Therefore at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine McGhee (U.S. Patent No. 6,553,075) and Jalali (U.S. Pub No. 2003/0095506) with Borg (U.S Patent No. 5, 355, 514) in order to determine the transmission quality continuously, as suggested by Borg.

Regarding claim 26 the combination of McGhee, Jalali and Borg disclose the data transmission rate control system of claim 25 that transmission rate adjustment process includes a SNR comparison process for comparing the signal-to-noise ration of variable rate data communication channel to a plurality of signal-to-noise ration ranges (see Jalali figure 2, paragraphs [0010], [0039]-[0074], [0084], and [0125], and claims 1, 2, 7, 10, 13, and 14), and a range selection process for selecting a signal-to noise ration range that encompasses the signal-to-noise ratio of variable rate data communication channel (figure 2, number 218 and 220 and paragraphs [0020], [0071]-[0073], and claims 1, 8 and 13).

Regarding claim 27 the combination of McGhee, Jalali and Borg disclose the data transmission rate control system of claim 26 wherein each signal-to-noise-ratio range is associated with a specific data transmission rate (see Jalali figure 2, number 220, 222, and 224 paragraphs [0010], [0036], [0039], [0043], [0074], and claims 1, 8, 13, 16, and 17), transmission rate adjustment process including a transmission rate selection process for setting the data transmission rate of variable rate data communication channel to the specific data transmission rate associated with the selected signal-to-noise ratio (see Jalali figure 2, numbers 220, 222, 224, figure 3, numbers 340, 330 see the solid arrow line from

340 to 330 for the transmitter side, numbers 378 and 380 see the dashed arrow line from 378 to 370 for the receiver side, figure 4, number 418 and figure 5, number 370, figure 5, number 370, and paragraphs [0025]-[0028], [0075], [0097]-[0098] and claims 13, 17,18, and 27).

Regarding claim 28 the combination of McGhee, Jalali and Borg disclose the data transmission rate control system of claim 27 wherein said variable rate data communication channel is a bidirectional channel that includes a receive side for receiving data from a remote device and a transmit side for transmitting data to that remote device (see Jalali figures 1A and 3, paragraphs [0091]- [0100]) said SNR determination process including a noise signal determination process for determining a noise signal strength factor for said receive side of said variable-rate data communication channel (see Jalali figures 1B, 2, paragraphs [0069]-[0075]).

Regarding claim 29 the combination of McGhee, Jalali and Borg disclose the data transmission rate control system of claim 28 wherein said SNR determination process includes: a received signal determination process for determining a received signal strength factor for said receive side of said variable-rate data communication channel during a transmission period (see Jalali paragraphs [0069]-[0073]; and a data signal determination process for determining the difference between said received signal strength factor and said noise signal strength factor, wherein said difference is a data signal strength factor (see Jalali paragraphs [0070], [0074], [0075], claim 8).

Regarding claim 30 the combination of McGhee, Jalali and Borg disclose the data transmission rate control system of claim 29 wherein said SNR determination process includes an SNR calculation process for determining said signal-to-noise ratio of said variable-rate data communication channel from said actual signal strength factor and said noise signal strength factor (see Jalali paragraphs [0070], [0074], [0075], claim 8).

Regarding claims 40, 41 the combination of McGhee, Jalali and Borg disclose the control system of claim 25 further comprising a transmission rate adjustment process, responsive to SNR determination process, for adjusting the data transmission rate of variable rate data communication channel based on its SNR (see Jalali figure 2).

Regarding claim 31, McGhee discloses adjusting the data transmission rate of the variable rate data communication channel if the SNR of the communication channel cannot be determined (column 4, lines 44-56). However, McGhee fails to disclose monitoring a variable-rate data bi-directional communication channel; bi-directional channel including a receive side for receiving data from a remote device and a transmit side for transmitting data to the remote. But, Jalali discloses monitoring a variable-rate data bi-directional communication channel; bi-directional channel including a receive side for receiving data from a remote device and a transmit side for transmitting data to the remote (see Jalali figures 1A and 3, paragraphs [0091]- [0100]). Therefore at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine McGhee (U.S. Patent No. 6,553,075) with Jalali (U.S. Pub No. 2003/0095506) in order to improve system performance by controlling from both receive and transmit

sides, as suggested by Jalali. However, McGhee and Jalali fail to disclose monitoring a non-transmission period to determine its signal-to-noise-ratio. But, Borg discloses monitoring a non-transmission period to determine its signal-to-noise-ratio (abstract, column 3, lines 13-55). Therefore at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine McGhee (U.S. Patent No. 6,553,075) and Jalali (U.S. Pub No. 2003/0095506) with Borg (U.S Patent No. 5, 355, 514) in order to determine the transmission quality continuously, as suggested by Borg.

Allowable Subject Matter

4. Claims 9, 18-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 9, 18-22 the applied references fail to disclose or render, obvious the claimed limitations that iteratively adjusting the data transmission rate of the variable rate data communication channel if the signal to noise ratio of the channel can not be determined for a defined period of time as specified in the claim.

5. Claims 32 -35 are allowed.

Regarding claims 32 and 33, the applied references fail to disclose or render, obvious the claimed limitations that iteratively adjusting the data transmission rate of the variable rate data communication channel if the signal to noise ratio of the channel can not be determined for a defined period of time as specified in the claim.

Response to Amendment

Applicant's arguments with respect to claims 1-41 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Simmons et al. (U.S. Pub. No. 2002/0094048) Synchronization Signal Detection and Method

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alemayehu Behulu whose telephone number is 703-305-4828. The examiner can normally be reached on 8 AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

Nguyen Vo
7_26_04

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PRIMARY EXAMINER